Remarks

Reconsideration of the Office Action of June 6, 2006 is respectfully requested.

Applicant appreciates the Examiner's withdrawal of the rejection of claims 64-66, 69-70, 72-73, and 76 under 35 U.S.C. 102(b) as being anticipated by Quigley 5,540,870, the withdrawal of the rejection of claims 64-67, 69-70, 72-74, 76, 78-79, 81-82, and 84-86 as being anticipated by Wilemon and the withdrawal of the rejection of claims 64-65, 72-73, and 76 as being anticipated by Snellman.

Further, as discussed in the phone interview on June 6, 2006, Applicant appreciates the Examiner's allowance of the amendment filed on March 17, 2005 to correct an inconsistency in the specification. In particular, in accordance with the amendment, it was agreed that the stated range for glass fibers in paragraphs [0048] and [0066] in the specification should be expanded to 11.2 Msi as set forth in the example on page 55, paragraph [0142] of the specification. Accordingly, Applicant respectfully requests entry of the amendment changing the range from about 6 to about 7 Msi to about 6 to about 11.2 Msi.

1. Claim Rejections Under 35 U.S.C. §103(a)

Claims 64-73, 75-86, 132-134 and 136 are rejected under 35 U.S.C. §103(a) as being unpatentable over Quigley 5,540,870 for reasons of record. In the record, the Examiner asserts that "Quigley teaches a structural member of fiber reinforced composite material comprising a multi-ply tube or rod formed with an outer sheath of fiber reinforced thermoplastic material and an inner core material, also of fiber reinforced thermoplastic material wherein, the fibers can be carbon or glass and each layer can be formed from a thermoplastic resin." The Examiner further asserts that "although Quigley does not specifically teach that the first layer is made from a first fiber and the at least one other layer is made from a second fiber, that Quigley teaches that the fiber materials that are employed in his invention include glass and carbon fibers". Based merely

on the fact that "a variety of fibers may be employed", the Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time the invention was made to form a fiber reinforced composite material using a first fiber type for the solid core and a second fiber type in the surrounding concentric second layer commensurate with the desired properties of the end product.

Applicant strongly disagrees with the Examiner for the reasons set forth below.

Applicant appreciates the Examiner conducting a phone interview. As discussed in the phone interview, Claim 64 has been amended to clarify that the fibers of the inner core are surrounded by the fibers of the outer core and that the fibers of the inner and outer cores are embedded within a cured resin matrix. Further, the fibers of the inner and outer cores are selected based on claimed physical properties. In addition, the fibers of the inner and outer cores are oriented substantially parallel to the longitudinal axis. Accordingly, Applicant claims the arrangement of fibers based on physical properties and orientation of fibers with respect to the longitudinal axis. Such a result could not be predicted from Quigley.

A composite is a material composed of at least two elements working together to produce material properties that are different to the properties of those elements on their own. Accordingly, it is when the elements are combined, (here, the fibers and resin) that exceptional properties can be obtained. However, for Applicant's invention, it is not merely the combination of such elements, but the selection of particular elements having particular physical properties, combined and oriented in a certain way that enables the composite to achieve the desired properties.

Quigley does not teach, disclose or even suggest that the inherent properties of the fibers affect the end properties of the composite member. Moreover, Quigley does not teach, disclose

or even suggest that the arrangement of fiber types with respect to other fiber types affects the physical properties of the core member. Quigley simply teaches that fibers may be selected from a variety of fiber types, "a variety of fibers may be employed, for example, aramid, carbon, graphite, glass, boron and ceramic." See Col. 3, line 20. There is no teaching regarding how certain tensile strengths, certain elongation properties or certain operating temperatures may be achieved by varying the components of the composite member. Accordingly, Applicant submits that the composite member taught by Quigley does not require consideration of inherent fiber properties, placement of selected fiber types within the member, or that such placement may be important in designing a member that is able to achieve certain physical properties.

Further, Quigley teaches away from orienting the fibers substantially parallel to the longitudinal axis. In particular, Quigley teaches that "generally axial fibers at 45° angle to the axis have been found useful." Col. 4, line 39.

Therefore, one of ordinary skill following the Quigley teachings would not have been motivated to select, within the realm of the disclosed fiber materials, a plurality of fibers having physical properties that fall within a predetermined range and further to surround the fibers with a second fiber type having physical properties that fall within a predetermined range different from the first fiber type. Moreover, one of ordinary skill following the Quigley teachings would not have been motivated to arrange these fiber types specifically according to their inherent physical properties in order to achieve sufficient strength and flexibility characteristics of the composite member.

It is therefore submitted that claim 64 should be considered to properly distinguish over the art made of record. Claims 65-73 and 75-77 further describe the composite core of claim 64 and should be considered allowable for the reasons given in connection therewith.

Claim 78 has been rejected for the reasons mentioned above. The claim has been amended to clarify the invention. Based on Applicant's arguments presented above, Applicant believes that claim 78 should be considered to distinguish over Quigley. Claims 79-86 further describe the composite core of claim 78 and should be considered allowable for the reasons given in connection therewith.

Claims 132-136 should be allowable for these same reasons.

The Examiner does not give a reason for the rejection of claim 130.

Claims 87-89, 131 and 135 are objected to as being dependent upon a rejected base claim. Applicant believes that this objection is overcome by the amendments and arguments presented above.

II. Terminal Disclaimer

Claims 64, 76 and 157 have been provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 23 and 24 of copending Application No. 10/971,629. Applicant herewith submits a terminal disclaimer. Accordingly, Applicant believes this rejection has been overcome.

Applicant believes that all of the claims now pending in this patent application are allowable and that the issues raised by the examiner have been addressed. Therefore, applicants respectfully request the examiner to reconsider and remove her rejections and to grant an early allowance. If any questions or issues remain to be resolved, the examiner is requested to contact the Applicants' attorney at the telephone number listed below.

Respectfully Submitted,

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